canceled, Claims 23, 25, 28-31, and 34-36 having been amended, and new Claim 37 having been added, by way of the present response.

In the outstanding Office Action, Claims 23-36 were rejected under 35 U.S.C. § 112. In response, Applicants have amended independent Claim 23 in a non-narrowing manner to recite "an evaporation can" in place of the previous recitation of "at least one evaporation can" to further prosecution of the application, and not for any reason related to the patentability of the claims over one or more references of record in the application. Applicants have also canceled independent Claim 24, thereby obviating the rejection of the claim. Inasmuch as the rejection may be applied to new dependent Claim 37, which includes features that are at least similar to canceled independent Claim 24, Applicants respectfully assert that new dependent Claim 37 recites functional limitations, which are permissible in apparatus claims, in accordance with MPEP § 2173.05(g). Applicants have also amended dependent Claim 29 in a non-narrowing manner to recite "said evaporation can" in place of the previous recitation of "said evacuation can," amended dependent Claim 31 in a non-narrowing manner to remove the recitation of "said at least one evacuation can" and to recite "said vacuum means" in place of the previous recitation of "said vacuum pump," and canceled dependent Claim 33, to further prosecution of the application, and not for any reasons related to the patentability of the claims over one or more references of record in the application. Thus, for at least these reasons, Applicants respectfully request that the rejection of remaining Claims 23 and 25-36 under 35 U.S.C. § 112 be withdrawn.

In the Office Action, Claims 23, 24, and 28 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over

Claims 1 and 2 of U.S. Patent No. 6,391,262 to Kamiya. Applicants respectfully assert that the rejection has been overcome for the reasons discussed in detail below.

Applicants have amended independent Claim 23 to include, *inter alia*, features of canceled dependent Claim 33, which was not indicated as having been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1 and 2 of Kamiya. Further, Applicants have canceled Claim 24, and dependent Claim 28 depends from independent Claim 23. Inasmuch as the rejection may be applied to new dependent Claim 37 that includes features of canceled Claim 24, the new dependent claim depends from independent Claim 23. Thus, for at least these reasons, Applicants respectfully request that the rejection of remaining Claims 23 and 28 under the judicially created doctrine of obviousness-type double patenting be withdrawn.

In the Office Action, Claims 23, 24, and 28 were rejected under the judicially created doctrine of double patenting over Claims 1 and 2 of Kamiya. Applicants respectfully assert that the rejection of the claims has been overcome for the reasons discussed in detail below.

As stated above, Applicants have amended independent Claim 23 to include, *inter alia*, features of canceled dependent Claim 33, which was not indicated as having been rejected under the judicially created doctrine of double patenting. Further, as stated above, Applicants have canceled Claim 24, and dependent Claim 28 depends from independent Claim 23. Also as stated above, inasmuch as the rejection may be applied to new dependent Claim 37 that includes features of canceled Claim 24, the new dependent claim depends from independent Claim 23. Thus, for at least these reasons, Applicants respectfully request that the rejection of remaining Claims 23 and 28 under the judicially created doctrine of double patenting be withdrawn.

In the Office Action, Claims 23-36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over British Publication No. 819,025 to Christiansen in view of any one of European Patent Application No. 0 034 920 to Hartig, U.S. Patent No. 4,094,747 to Pfenninger, U.S. Patent No. 6,309,513 to Sephton, or U.S. Patent No. 4,799,461 to Shigenaka et al. (hereafter Shigenaka). Applicants respectfully assert that the rejections of the claims have been overcome for the reasons discussed in detail below.

The present invention is directed to a desalination apparatus operated on a batch operation mode. Independent Claim 23, as amended, recites control means for controlling a vacuum means intermittently so that the vacuum means is operated for a predetermined period after concentrated raw water is discharged from an evaporation can, the raw water is supplied into the evaporation can and the evaporation can is closed upon starting of a desalination operation. Examples of advantages of such an apparatus are discussed throughout the specification.

Regarding the rejection of independent Claim 23, the Office Action appears to concede that neither Christiansen, nor Hartig, nor Pfenninger, nor Sephton, nor Shigenaka teaches or suggests the claimed features of controlling said vacuum means intermittently, as recited in independent Claim 23. The Office Action asserts, however, that "[t]he claims directed to apparatuses are not patentably distinguishable from the apparatus of any[] . . . of the [applied] . . . references by mere recitation of operating the vacuum means," and that "[t]he manner or method in which an apparatus is to be used is not germane to the issue of patentability of the apparatus itself. Applicants fail to delineate structure(s) not shown or rendered obvious by the prior art."[1] Applicants respectfully traverse these assertions for the following reasons.

[1] Page 6, lines 1-6, of the outstanding Office Action.

Applicants respectfully assert that independent Claim 23, as amended, recites "control means for controlling said vacuum means intermittently so that said vacuum means is operated for a predetermined period after concentrated raw water is discharged from said evaporation can, the raw water is supplied into said evaporation can and said evaporation can is closed upon starting of a desalination operation." Thus, in accordance with 35 U.S.C. § 112, sixth paragraph, independent Claim 23 recites the requisite structure for achieving the specified function. As stated in MPEP § 2181, the Examiner "may not disregard the structure disclosed in the specification corresponding to such language [in the claims] when rendering a patentability determination." (Underlining added).

Therefore, for the reasons discussed in detail above, Applicants respectfully assert that neither Christiansen, nor Hartig, nor Pfenninger, nor Sephton, nor Shigenaka, whether taken alone or in combination, teaches or suggests the claimed features of control means for controlling a vacuum means intermittently so that the vacuum means is operated for a predetermined period after concentrated raw water is discharged from an evaporation can, the raw water is supplied into the evaporation can and the evaporation can is closed upon starting of a desalination operation, as recited in independent Claim 23. Thus, for at least these reasons, Applicants respectfully request that the rejection of independent Claim 23 under 35 U.S.C. § 103(a) be withdrawn and the independent claim allowed.

Notwithstanding the above discussion, which provides sufficient and adequate grounds for the withdrawal of the outstanding rejection and subsequent allowance of independent Claim 23, Applicants respectfully assert that any *prima facie* case of obviousness has been rebutted through the establishment of "new" and "unexpected results" by factual evidence, as disclosed in Applicants' originally filed specification.

Specifically, Applicants respectfully assert that page 32, line 8 to page 33, of the originally filed specification, and original Figure 17, disclose by way of non-limiting examples the requisite factual evidence of new and unexpected results.

In particular, the above-referenced portions of the originally filed disclosure describe operating conditions of a desalination apparatus achieving the new and unexpected result of providing a water-producing capacity of more than 40 times that of a known desalination apparatus.

Therefore, for the reasons discussed in detail above, Applicants respectfully assert that any *prima facie* case of obviousness established by the Office Action has been rebutted. Thus, for at least these reasons, Applicants respectfully request that the rejection of independent Claim 23 under 35 U.S.C. § 103(a) be withdrawn and the independent claim allowed.

Original dependent Claims 25-32 and 34-36 depend from independent Claim 23, and are therefore also allowable for at least the same reasons as the independent claim, as well as for their own features. Thus, for at least these reasons, Applicants respectfully request that the rejection of dependent Claims 25-32 and 34-36 under 35 U.S.C. § 103(a) be withdrawn and the dependent claims allowed.

Further, new dependent Claim 37 depends from independent Claim 23, and is therefore also allowable for at least the same reasons as the independent claim, as well as for its own features. Thus, for at least these reasons, Applicants respectfully request the allowance of new dependent Claim 37.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 23, 25-32, and 34-37 is earnestly solicited.

Finally, the attention of the Patent Office is directed to the change of address of Applicants' representative, effective January 6, 2003:

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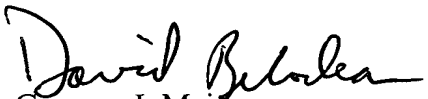
Please direct all future communications to this new address.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below listed telephone number.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND
MAIER & NEUSTADT, P.C.



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Serial No.: 09/581,235
Amendment Filed: 2-19-03

IN THE CLAIMS

The claims have been amended as follows:

1.-8. (Canceled)

23. (Amended) A desalination apparatus operated on a batch operation mode comprising:

[at least one] an evaporation can;

a heat exchanger placed in raw water in said evaporation can so as to subject low-temperature waste heat excluding solar energy supplied to said heat exchanger and raw water in the evaporation can to heat exchange and generate water vapor in the evaporation can;

a condenser connected to said evaporation can [and placed in raw water in a raw water tank so as] to receive the water vapor from said evaporation can, cool the water vapor by subjecting the water vapor and [raw] cooling water [in the raw water tank] to heat exchange and obtain distilled water;

a distilled water tank connected to said condenser for receiving and storing said distilled water;

vacuum means associated with said evaporation can for evacuating said evaporation can and depressurizing an inside thereof [for a predetermined period upon starting of a desalinating operation so as] to promote generation of water vapor in said evaporation can; [and]

raw water supply means provided at said evaporation can for externally supplying raw water into said evaporation can;

raw water discharge means for opening said evaporation can to the atmosphere for discharging concentrated raw water from said evaporation can; and

control means for controlling said vacuum means intermittently so that said vacuum means is operated for a predetermined period after concentrated raw water is discharged from said evaporation can, the raw water is supplied into said evaporation can and said evaporation can is closed upon starting of a desalination operation.

see p. 17 line 15

24. (Canceled)

25. (Amended) A desalination apparatus according to claim 23 or [24] 37, wherein said apparatus is associated with a steam turbine for electric power generation in a plant to receive potential heat of exhaust steam from said steam turbine as said low temperature waste heat.

28. (Amended) A desalination apparatus according to claim 23 or [24] 37, wherein said at least one evaporation can comprises a plurality of evaporation cans, said heat exchanger is connected to a first evaporation can, said condenser is connected to a final evaporation can, and a further condenser is connected to an upstream side evaporation can and placed in raw water in a down-stream side evaporation can in each pair of adjacent evaporation cans, so that said further condenser receives water vapor from said upstream side evaporation can, cool the water vapor with raw water in said downstream-side evaporation can and thereby produce distilled water, and also heats the raw water in said downstream side evaporation can and generates raw water.

29. (Amended) A desalination apparatus according to claim 23 [or 24, further comprising a control means for controlling evacuating operation of said vacuum

means and opening and closing of], wherein said raw water supply means comprises a first control valve connected to said [evacuation] evaporation can for supplying raw water into said evaporation can, and said raw water discharge means comprises a second control valve for opening said evaporation can to the atmosphere.

30. (Amended) A desalination apparatus according to claim 29, wherein said control means is so arranged that it controls said vacuum means and said control valves so that said concentrated raw water is discharged from said evaporation can, the raw water is supplied into said evaporation can, and an [evacuating] evacuation of said evaporation can [and an opening of said evaporation can to the atmosphere are intermittently repeated] is performed for a predetermined period upon the starting of the desalination operation.

31. (Amended) A desalination apparatus according to claim 29, [wherein said at least one evacuation can comprises] further comprising a plurality of evaporation [can] cans [which are] disposed in parallel rows each [consisting of] including at least one evaporation can, wherein said control means is so arranged that it controls said vacuum [pump] means and said control valves in such a way that said evaporation cans in all said rows do not simultaneously open to the atmosphere, thereby enabling a continuous operation.

33. (Canceled)

34. (Amended) A desalination apparatus according to claim [33] 29, wherein said concentrated raw water discharge means is connected to a lower part of said evaporation can that is opened or closed by said control means.

35. (Amended) A desalination apparatus according to claim 23 or [24] 37, wherein said evaporation can, heat exchanger, condenser, distilled water tank, vacuum means and raw water supply means are assembled in a single frame as a unit.

36. (Amended) A desalination apparatus according to claim [33] 29, wherein said evaporation can, heat exchanger, condenser, distilled water tank, vacuum means, raw water supply means and concentrated raw water discharge means are assembled in a single frame as a unit.

37. (New)